

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

Original claims 1-27 and amended claims 1-27 are cancelled.

Claim 28 (new): A flame-retardant mixture for lignocellulose composites, comprising:

- from 60 to 90% by mass of at least one of particulate and fibrous lignocellulose materials, and

- from 40 to 10% by mass of a flame-retardant concentrate immobilized on or in the particulate or fibrous lignocellulose materials as carriers, having

- from 16 to 60% by mass of flame retardants of the type consisting of boric acids or the salts thereof or both, and

- from 16 to 75% by mass of melamine resins, the melamine resins being polycondensates partly or completely etherified with C₁-C₁₈-monoalcohols, dialcohols or polyalcohols of melamine and C₁-C₈-aldehydes, and wherein

- the flame retardants of the type consisting of boric acid or the salts thereof are chemically coupled to the melamine resins, and the flame retardant concentrates are immobilized on or in the carrier substance of the particulate or fibrous lignocellulose materials as carriers.

Claim 29 (new): The flame-retardant mixture as claimed in claim 28, wherein the flame retardant concentrate immobilized on or in the particulate or fibrous lignocellulose materials as carriers furthermore comprises up to 50% by mass of synergistic agents or 25% by mass of further additives or both.

Claim 30 (new): The flame-retardant mixture as claimed in claim 28, wherein the particulate and fibrous lignocellulose materials are chips, fibers or granular particles of softwoods or hardwoods, regenerated cellulose fibers, paper fibers, cotton fibers or bast fibers of flax, hemp, jute, ramie, sisal or kenaf.

Claim 31 (new): The flame-retardant mixture as claimed in claim 28, wherein the melamine resins are polycondensates partly or completely etherified with at least one of C₁-C₁₈-monoalcohols, dialcohols and polyalcohols of melamine and formaldehyde.

Claim 32 (new): The flame-retardant mixture as claimed in claim 28, wherein the melamine resins are relatively high molecular weight melamine resin ethers having a number of average molar masses of from 500 to 50,000.

Claim 33 (new): The flame-retardant mixture as claimed in claim 28, wherein the flame retardants of the type consisting of boric acids or the salts thereof are selected from the group consisting of boric acid, metaboric acid, sodium tetraborate, sodium octaborate and ammonium pentaborate, and wherein the molar B₂O₃:Na₂O ratio is from 1:0 to 2:1.

Claim 34 (new): The flame-retardant mixture as claimed in claim 29, wherein the synergistic agents are selected from the group consisting of urea, melamine, melamine cyanurate, unetherified melamine resin precondensates, partly etherified melamine resin precondensates, cyanuric acid and phosphorus salts, and wherein the phosphorus salts are at least one of sodium phosphates, monoammonium phosphates or ammonium polyphosphates, and wherein the proportion of the phosphorus salts is from 0 to 60% by mass based on the overall sum of the synergistic agents.

Claim 35 (new): The flame-retardant mixture as claimed in claim 29, wherein the further additives are at least one of water repellants, impregnating auxiliaries and immobilizing auxiliaries for flame retardants.

Claim 36 (new): A process for the production of a flame-retardant lignocellulose composite comprising:

- from 60 to 90% by mass of at least one of particulate and fibrous lignocellulose materials, and

- from 40 to 10% by mass of a flame-retardant concentrate immobilized on or in the particulate or fibrous lignocellulose materials as carriers, having

 - from 16 to 60% by mass of flame retardants of the type consisting of boric acids or the salts thereof or both, and

 - from 16 to 75% by mass of melamine resins, the melamine resins being polycondensates partly or completely etherified with C₁-C₁₈-monoalcohols, dialcohols or polyalcohols of melamine and C₁-C₈-aldehydes, and wherein

the flame retardants of the type consisting of boric acid or the salts thereof are chemically coupled to the melamine resins, and the flame retardant concentrates are immobilized on or in the carrier substance of the particulate or fibrous lignocellulose materials as carriers, wherein the composite is produced by a liquid impregnation process in which the particulate or fibrous lignocellulose materials are impregnated with solutions or dispersions of flame retardants of the type consisting of boric acids or the salts thereof at temperatures of from 20 to 90°C by spraying or immersion, and the particulate or fibrous lignocellulose materials impregnated with flame retardant concentrates are dried at from 55 to 170°C with partial curing of the melamine resins.

Claim 37 (new): The process as claimed in claim 36, wherein the particulate or fibrous lignocellulose materials are impregnated with solutions of melamine resins in water, C₁-C₈-alcohols or mixtures of from 10 to 90% by mass of water and from 90 to 10% by mass of from C₁-C₈-alcohols, having a solids content of melamine resins of from 10 to 60% by mass, which solutions contain the flame retardants of the type consisting of boric acids or the salts thereof or both and synergistic agents in dissolved or dispersed form.

Claim 38 (new): The process as claimed in claim 36, wherein the particulate or fibrous lignocellulose materials are impregnated with solutions or dispersions of the synergistic agents and subsequently with solutions of melamine resins in water, C₁-C₈-alcohols or mixtures of from 10 to 90% by mass of water and from 90 to 10% by mass of C₁-C₈-alcohols, having a solids content of melamine resins of from 10 to 60% by mass, which solutions contain the flame retardants of the type consisting of boric acids or the salts thereof or both in dissolved or dispersed form.

Claim 39 (new): The process as claimed in claim 36, wherein the particulate or fibrous lignocellulose materials are impregnated with solutions or dispersions of the flame retardants and of the synergistic agents and subsequently with solutions of melamine resins in water, C₁-C₈-alcohols or mixtures of from 10 to 90% by mass of water and from 90 to 10% by mass of C₁-C₈-alcohols, having a solids content of melamine resins of from 10 to 60% by mass.

Claim 40 (new): The process as claimed in claim 36, wherein the particulate or fibrous lignocellulose materials are impregnated with solutions of melamine resins in water, C₁-C₈-alcohols or mixtures of from 10 to 90% by mass of water and from 90 to 10% by mass of from C₁-C₈-alcohols, having a solids content of melamine resins of from 10 to 60% by mass, which solutions contain the flame retardants of the type consisting of boric acids or the salts thereof or both in dissolved or dispersed form.

Claim 41 (new): The process as claimed in claim 36, wherein the particulate or fibrous lignocellulose materials are impregnated with solutions of melamine resins in water, C₁-C₈-alcohols or mixtures of from 10 to 90% by mass of water and from 90 to 10% by mass of C₁-C₈-alcohols, having a solids content of melamine resins of from 10 to 60% by mass, and subsequently with solutions of the flame retardants of the type consisting of boric acids or the salts thereof or both.

Claim 42 (new): The process as claimed in claim 36, wherein the particulate or fibrous lignocellulose materials are impregnated with solutions of the flame retardants of the type consisting of boric acids or the salts thereof or both, subsequently with solutions or dispersions of the synergistic agents and subsequently with solutions of melamine resins in water, C₁-C₈-alcohols or mixtures of from 10 to 90% by mass of water and from 90 to 10% by mass of C₁-C₈-alcohols, having a solids content of melamine resins of from 10 to 60% by mass.

Claim 43 (new): The process as claimed in claim 36, wherein further additives are added to the melamine resins, to the flame retardants of the type consisting of boric acids or the salts thereof or to the synergistic agents.

Claim 44 (new): A process for the production of a flame-retardant lignocellulose composite comprising:

- from 60 to 90% by mass of at least one of particulate and fibrous lignocellulose materials, and

- from 40 to 10% by mass of a flame-retardant concentrate immobilized on or in the particulate or fibrous lignocellulose materials as carriers, having

- from 16 to 60% by mass of flame retardants of the type consisting of boric acids or the salts thereof or both, and

- from 16 to 75% by mass of melamine resins, the melamine resins being polycondensates partly or completely etherified with C₁-C₁₈-monoalcohols, dialcohols or polyalcohols of melamine and C₁-C₈-aldehydes, and wherein the flame retardants of the type consisting of boric acid or the salts thereof are chemically coupled to the melamine resins, and the flame retardant concentrates are immobilized on or in the carrier substance of the particulate or fibrous lignocellulose materials as carriers, wherein

- the flame-retardant mixture is prepared by a melt impregnation process in which flame retardants are dispersed and partly dissolved in melts of melamine resins at from 35 to 130°C and subsequently the particulate or fibrous lignocellulose materials are dispersed in the mixtures and impregnated with the melt of said mixtures, partial curing of the melamine resin taking place as a result of a

temperature increase to 90 to 170°C and further additives being added to the melamine resins, to the flame retardants of the type consisting of boric acids or the salts thereof or both or to the synergistic agents.

Claim 45 (new): The process as claimed in claim 44, wherein, in the melt impregnation process, in addition to the flame retardants of the type consisting of boric acids or the salts thereof or both, synergistic agents are dispersed and partly dissolved in the melts of melamine resins at from 35 to 130°C.

Claim 46 (new): A process using a flame-retardant mixture comprising:

- from 60 to 90% by mass of at least one of particulate and fibrous lignocellulose materials, and

- from 40 to 10% by mass of a flame-retardant concentrate immobilized on or in the particulate or fibrous lignocellulose materials as carriers, having

 - from 16 to 60% by mass of flame retardants of the type consisting of boric acids or the salts thereof or both, and

 - from 16 to 75% by mass of melamine resins, the melamine resins being polycondensates partly or completely etherified with C₁-C₁₈-monoalcohols, dialcohols or polyalcohols of melamine and C₁-C₈-aldehydes, and wherein

the flame retardants of the type consisting of boric acid or the salts thereof are chemically coupled to the melamine resins, and the flame retardant concentrates are immobilized on or in the carrier substance of the particulate or fibrous lignocellulose materials as carriers, wherein the composite is produced by a liquid impregnation/solids mixing process in which the particulate or fibrous lignocellulose materials are impregnated with solutions or dispersions of flame retardants of the type consisting of boric acids or the salts thereof or both at temperatures of from 20 to 90°C by spraying or immersion, and the impregnated particulate or fibrous lignocellulose materials are dried.

Claim 47 (new): The process as claimed in claim 46, wherein the particulate or fibrous lignocellulose materials are impregnated with solutions of melamine resins in water, C₁-C₈-alcohols or mixtures of from 10 to 90% by mass of water and from 90 to 10% by mass of C₁-C₈-alcohols, having a solids content of melamine resins of from 10 to 60% by mass, and simultaneously or subsequently with solutions of the flame retardants of the type consisting of boric acids or the salts thereof or both at temperatures of from 20 to 90°C, the impregnated particulate or fibrous lignocellulose materials are dried at from 55 to 170°C with partial curing of the melamine resins, and synergistic agents are mixed as solids with the impregnated particulate or fibrous lignocellulose materials.

Claim 48 (new): The process as claimed in claim 46, wherein the particulate or fibrous lignocellulose materials are impregnated with solutions of the flame retardants of the type consisting of boric acids or the salts thereof or both at temperatures of from 20 to 90°C, the impregnated particulate or fibrous lignocellulose materials are dried at from 55 to 170°C, and synergistic agents and melamine resins are mixed as solids with the impregnated particulate or fibrous lignocellulose materials.

Claim 49 (new): The process as claimed in claim 46, wherein the particulate or fibrous lignocellulose materials are impregnated with solutions or dispersions of the flame retardants of the type consisting of boric acids or the salts thereof or both and synergistic agents at temperatures of from 20 to 90°C, the impregnated particulate or fibrous lignocellulose materials are dried at from 55 to 170°C, and melamine resins are mixed as solids with the impregnated particulate or fibrous lignocellulose materials.

Claim 50 (new): The process as claimed in claim 46, wherein further additives are added to the melamine resins, to the flame retardants of the type consisting of boric acids or the salts thereof or both, or to the synergistic agents.

Claim 51 (new): A molding material for the production of flameproofed lignocellulose composites, prepared by the steps of:

- a) dry premixing of the components
 - i - from 40 to 95% by mass of flame-retardant mixture comprising:
 - from 60 to 90% by mass of at least one of particulate and fibrous lignocellulose materials, and
 - from 40 to 10% by mass of a flame-retardant concentrate immobilized on or in the particulate or fibrous lignocellulose materials as carriers, having
 - from 16 to 60% by mass of flame retardants of the type consisting of boric acids or the salts thereof or both, and
 - from 16 to 75% by mass of melamine resins, the melamine resins being polycondensates partly or completely etherified with C₁-C₁₈-monoalcohols, dialcohols or polyalcohols of melamine and C₁-C₈-aldehydes, and wherein
 - the flame retardants of the type consisting of boric acid or the salts thereof are chemically coupled to the melamine resins, and the flame retardant concentrates are immobilized on or in the carrier substance of the particulate or fibrous lignocellulose materials as carriers,
 - ii - from 5 to 60% by mass of thermosetting prepolymers selected from the group consisting of phenol resins, urea resins, melamine resins, guanidine resins, cyanamide resins and aniline resins, and
 - iii - from 0.1 to 10% by mass of processing auxiliaries or auxiliaries,
- b) and granulation.

Claim 52 (new): The molding material as claimed in claim 51, wherein the preparation is effected by melt compounding at from 100 to 170°C and granulation following the dry premixing of the components.

Claim 53 (new): A flameproofed lignocellulose composite, produced by extrusion, injection molding or pressing of the molding materials as claimed in claim 51 and curing.